

Claims

5 1. Axial piston drive with a continuously adjustable piston
stroke, which comprises a drive shaft (10, 12, 170) and a swash
plate (16, 18, 174) disposed in a bearing seat (14) that is
10 positioned at a first tilt angle (22) with respect to the long
itudinal direction (20) and on which the swash plate (16, 18,
174) is supported within a crank chamber (24), with a bore of
bearing (30) that is tilted by a second tilt angle (28) with
respect to the perpendicular line (26) of the swash plate (16,
18, 174), said swash plate (16, 18, 174) being rotatable
15 through a range of angles by means of a controller (32, 34) in
order to adjust the piston stroke, and also comprises at least
one piston (44, 46, 48, 50) movably disposed in a cylinder (36,
38, 40, 42) and connected to the swash plate (16, 18, 174) so
as to be driven thereby,
20 characterized in that onto the rotational movement from a
maximal resulting tilt angle (52) to the minimal resulting tilt
angle (54) there is superimposed an axial stroke movement (56)
of the swash plate (16, 18, 174) in the direction towards the
piston (44, 46, 48, 50), and onto the rotational movement from
the minimal resulting tilt angle (54) to the maximal resulting
25 tilt angle (52) there is superimposed an axial stroke movement
(116) of the swash plate in the direction away from the piston
(44, 46, 48, 50).

2. Axial piston drive according to Claim 1,
30 characterized in that the swash plate (16, 18, 174) is
operatively connected to the drive shaft (10, 12, 170) by a
screw thread (58, 172) that generates the supplementary axial
stroke movement (56) from the rotational movement of the swash
plate (16, 18, 174).

3. Axial piston drive according to Claim 2,
characterized in that the thread (58, 172) is integrally formed
on the drive shaft (10, 12, 170).

4. Axial piston drive according to one of the preceding
claims,
characterized in that when turned through an angle of 180°, the
swash plate (16, 18, 174) is shifted axially by a distance
amounting to half a maximal piston stroke (60).

5. Axial piston drive according to one of the claims 2 to 4,
characterized in that the swash plate (174) is rotatably seated
in an axially sliding sleeve (178).

6. Axial piston drive according to one of the preceding
claims,
characterized in that the controller (32) comprises a
counterforce mechanism with at least one prestressed torsion
spring (62, 64, 66, 68) that acts on the swash plate (16, 174).

7. Axial piston drive according to one of the preceding
claims,
characterized in that the controller (34) comprises an
adjustment unit (70) that is separate from the piston (44, 46,
48, 50).

8. Axial piston drive according to Claim 7,
characterized in that the adjustment unit (70) is hydraulically
driven.

9. Axial piston drive according to Claim 8,
characterized in that the hydraulic adjustment unit (70) is
supplied with compressed oil by a hydraulic unit that is
independent of the medium transported by the piston (44, 46,
48, 50).

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10. Axial piston drive according to Claim 8, characterized in that the hydraulic adjustment unit (70) is supplied with compressed oil by an oil separator (72) disposed downstream of the cylinder (36, 38, 40, 42).

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11. Axial piston drive according to Claim 10, characterized in that the hydraulic adjustment unit (70) is connected by way of a drain (74) to the crank chamber (24), and a influx (76) from the oil separator (72) to the adjustment unit (70) and/or the drain (74) from the adjustment unit (70) to the
10 crank chamber (24) can be controlled.